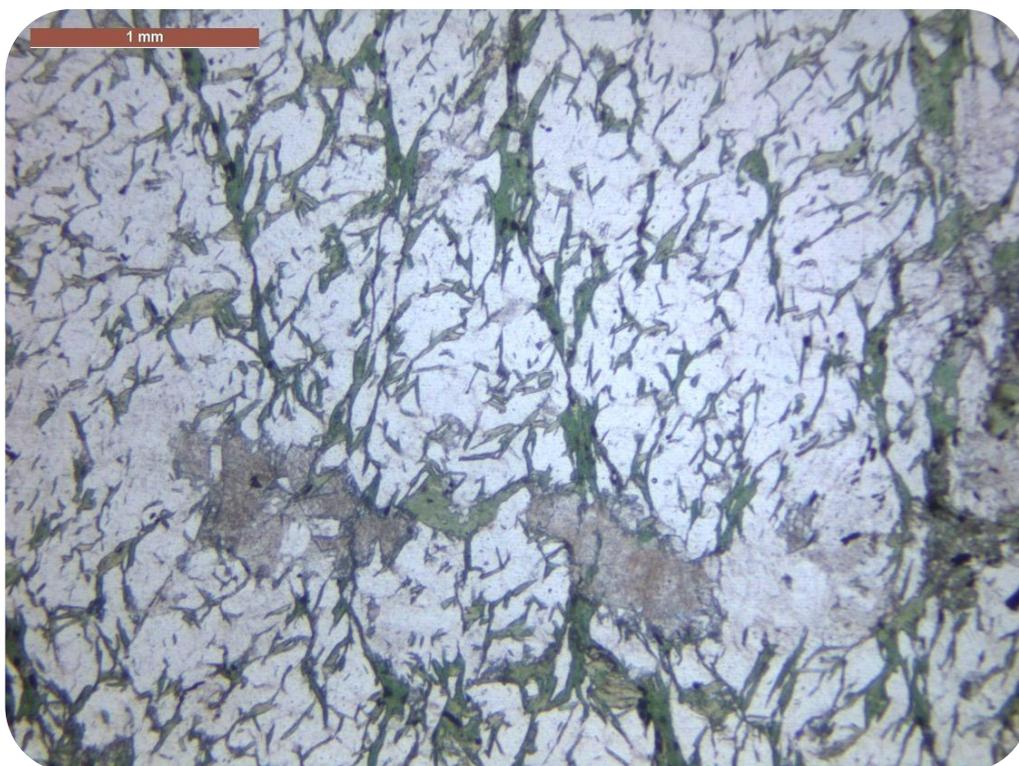


# Mineral Resources Tasmania

Laboratory Report

LJN2019-009a

## PETROLOGICAL AND MINERALOGICAL ANALYSES, DRILLCORE, ALPINE PROSPECT



An unpublished  
Mineral Resources  
Tasmania Report for:

**Sean Westbrook,  
Kingfisher**

**By:** R.S. Bottrill  
L Unwin  
**Date:** 29  
September 2021

# Mineral Resources Tasmania

## SUMMARY

*The samples include a mottled, sheared, pyrite – magnetite - quartz - siderite rock, and a sheared quartz-chlorite-carbonate rock, probably a metamafic rock. They resemble Bowry Formation rocks but could be related to the Devonian granites in the area.*

## INTRODUCTION

We inspected a drill core from the Alpine prospect between Corinna and Zeehan, and tested two rock samples from the borehole (Table 1), to determine their petrology and origin. The host rock is in the Arthur Metamorphic complex and the aim is to compare the mineralisation with the Savage River mine, in the Bowry Formation of the same complex.

**Table 1: Sample details.**

Reg Number	Field Number	Location	Sample Description
G409212	AP14/172.4	Alpine DDH	Magnetite-pyrite ore
G409215	AP14/151.0	Alpine DDH	Spotted schist

## SAMPLE DESCRIPTIONS

### **G409212 AP14/172.4**

Under the stereomicroscope the sample exhibits an irregularly mottled texture with a weak foliation. It contains mostly pyrite and magnetite in a grey gangue, with a rudimentary coarse lamination (Fig. 1).

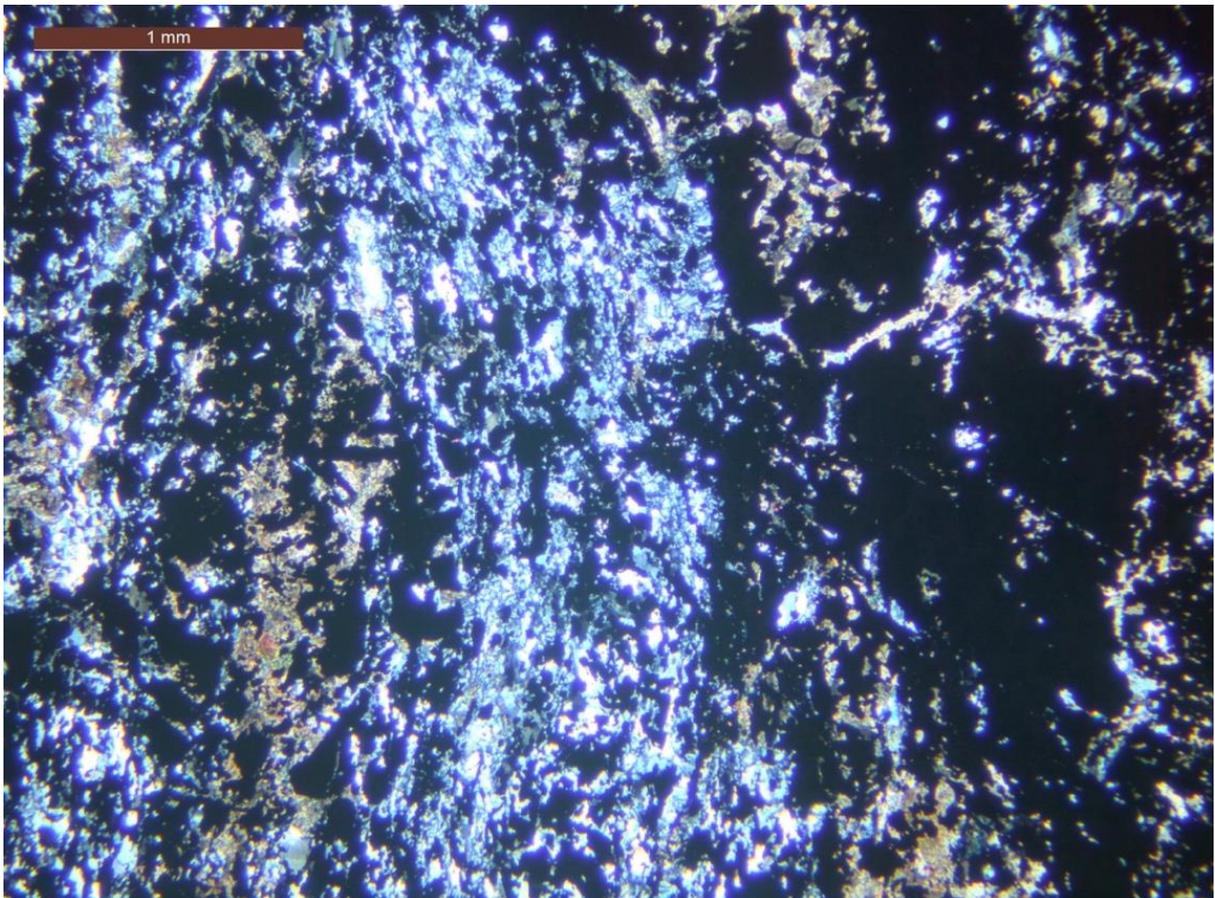
The polished thin section indicates bands and patches of black magnetite and pyrite intergrown with brown carbonate (mostly siderite and ankerite), interspersed with grey-white foliated zones of chlorite and quartz (Fig. 2, 3).

It is a sheared altered, mineralised carbonate rock.

# Mineral Resources Tasmania

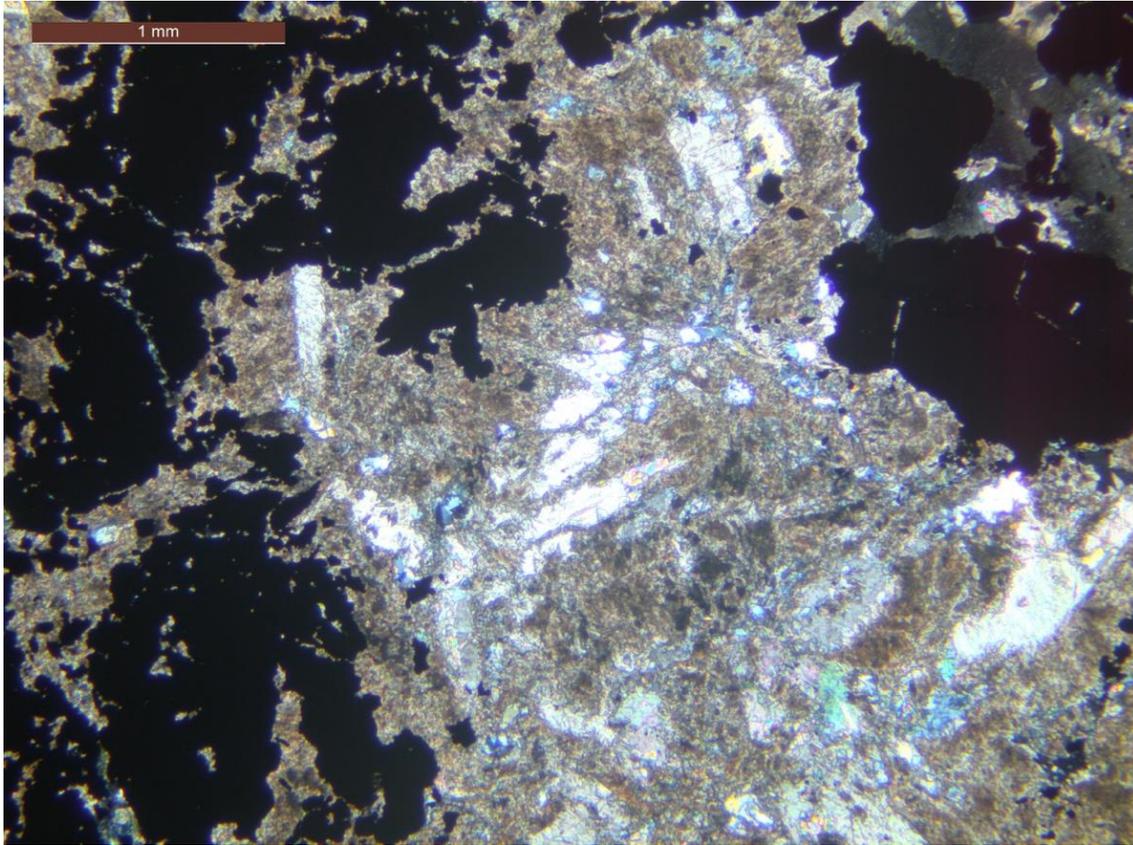


*Fig. 1. Magnetite-pyrite-carbonate rock. Sample G409212. FOV: about 70 mm.*



*Fig. 2. Sample G409212, Polarised light, crossed polars. Bands and patches of black magnetite and pyrite, plus grey-white foliated zones of chlorite and quartz.*

# Mineral Resources Tasmania



*Fig. 3. Sample G409212, Polarised light, crossed polars, showing highly skeletal black magnetite in a brown carbonate and quartz (white) matrix.*

## **G409215 AP14/151.0**

Under the stereomicroscope the sample exhibits a foliated dark grey-green spotted phyllitic to schistose siltstone, with a coarse quartz vein (Fig. 4).

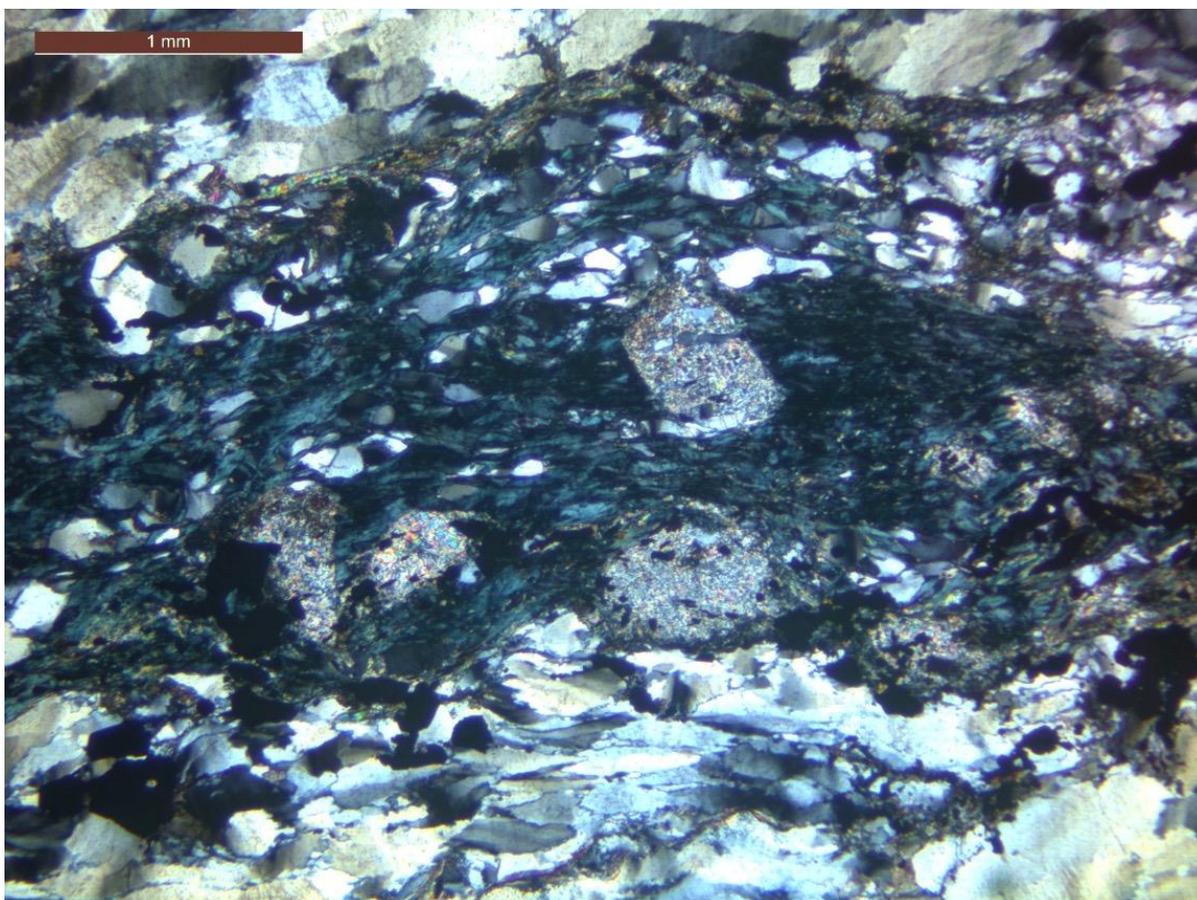
The polished thin section reveals rock to be a quartz-chlorite-carbonate schist. It has some strong banding with strongly foliated, dark green chlorite-rich lamellae interspersed with less foliated chloritic quartz lamellae (Figs 4-6). The carbonate porphyroblasts are scattered throughout both chloritic and quartzose bands, The carbonate spots are pale brown and vary from euhedral in chlorite to highly irregular and ragged within quartz (Figs 5 - 7). Most of the quartz is highly stressed

The rock is a mafic schist, and may derive from a highly altered mafic volcanic, tuff or sediment.

# Mineral Resources Tasmania

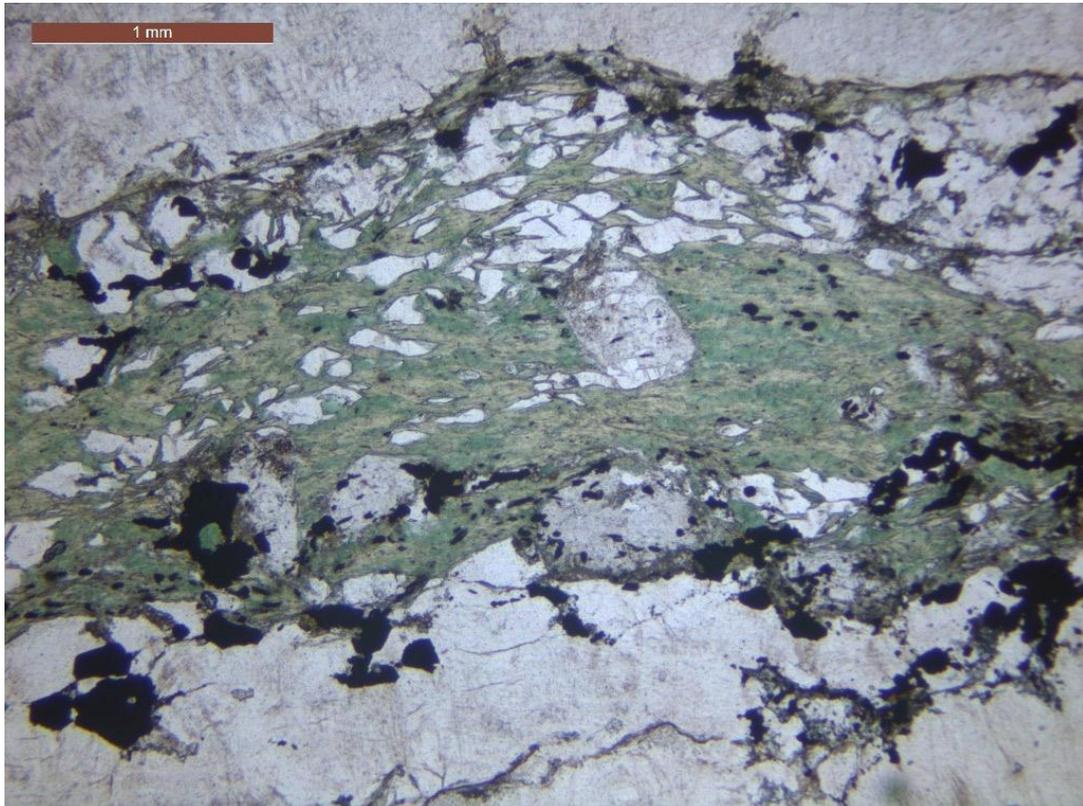


*Fig. 4. Spotted siltstone with quartz veining. Sample G409215. FOV: about 60 mm.*

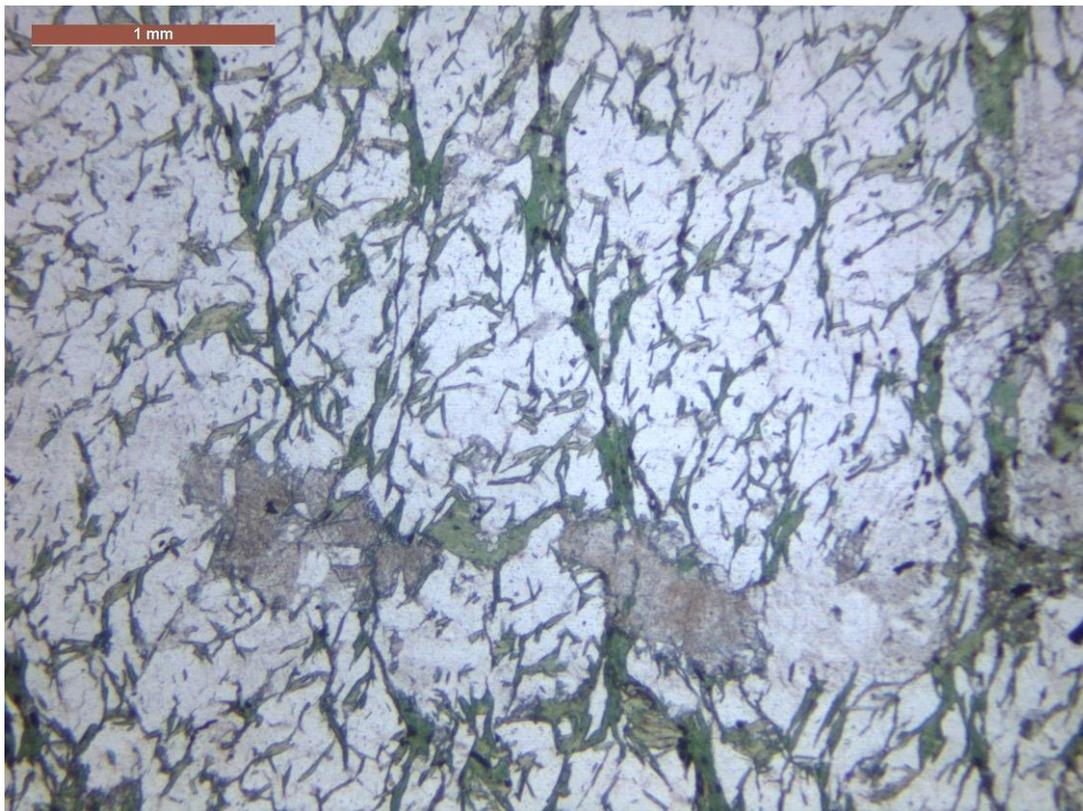


*Fig. 5. Sample G409213, Sample G409215, Polarised light, crossed polars, showing carbonate porphyroblasts and disseminated and stringer pyrite (black) in a quartz-chlorite matrix.*

# Mineral Resources Tasmania



*Fig. 6. Sample G409215, Polarised light, crossed polars, showing apatite and carbonate porphyroblasts and disseminated and stringer pyrite (black) in a sheared quartz-chlorite matrix.*



*Fig. 7. Sample G409215, Polarised light, crossed polars, showing brownish clots of carbonate in a quartz-chlorite matrix.*

# Mineral Resources Tasmania

## XRD ANALYSES

The samples were prepared, examined and analysed in the MRT laboratories, Rosny Park, Tasmania. They were run on a Rigaku Miniflex 600 X-Ray Diffractometer system: a 600W generator 150mm goniometer with a Cu tube; 40kV/15mA, sample spinner and a D/teX Ultra High Speed 1D Detector with Be window,  $-3^{\circ}$  to  $145^{\circ}$   $2\theta$  scanning range and  $2^{\circ}$  -  $140^{\circ}$   $2\theta$  measuring range, with a scanning speed of 0.01 to  $100^{\circ}/\text{min}$ , A graphite monochromator and a K $\beta$  Ni- filter, The analysis software used is the PDXL2 using the ICCD database.

The results are shown in Appendix 1 and Table 2.

Sample G409212 comprises mostly magnetite and mixed carbonates, mostly siderite, with minor pyrite.

Sample G409215 comprises mostly quartz, with minor chlorite, mica and carbonates. No sulphides, sulphates or other deleterious constituents were detected.

**Table 2: XRD Summary (approx. wt.%)**

Mineral Phase	Registration Number	
	G409212	G409215
Quartz	3(1)	65(8)
Magnetite	30(3)	
Chlorite/chamosite	3(1)	12(2)
Phengite/muscovite		11(2)
Siderite	44(4)	5(1)
Apatite		3(1)
Ankerite	10(2)	2(1)
Calcite	6(2)	<1(1)
Amphibole		<1(1)
Pyrite	4(1)	<1(1)

# Mineral Resources Tasmania

## CONCLUSIONS AND DISCUSSION

The samples include a mottled, sheared, pyrite – magnetite - quartz – (magnesian) siderite rock, and a sheared, spotted quartz-chlorite-carbonate rock, probably a metamafic rock. The samples resemble the mineralized, altered and sheared mafic/carbonate rocks in the Bowry Formation rocks at the Savage river mines, but are perhaps more siliceous. The carbonates are more Fe-rich than most of the Savage River carbonates (Bottrill & Taheri, 2008, Webster et al., 2017). They could also be skarn-style deposits related to the Devonian granites in the district, replacing some carbonates in the formation.

The core contains no obvious fibrous to asbestiform minerals.

## REFERENCES

- BOTTRILL, R. S.; Taheri, J., 2008. Petrology of the host rocks, including mineralisation and adjacent rock sequences, from the Savage River mine. *MRT UR 2007/05*
- Webster A, Braniff V and Bottrill R.S., 2017. *Savage River magnetite deposits. AUSTRALIAN ORE DEPOSITS AIMM monograph 32: p.829-834*

R.S. Bottrill  
**MINERALOGIST/PETROLOGIST**

L Unwin  
**TECHNICAL OFFICER**

### Disclaimers

*While every care has been taken in the preparation of this report, no warranty is given as to the correctness of the information and no liability is accepted for any statement or opinion or for any error or omission. No reader should act or fail to act on the basis of any material contained herein. Readers should consult professional advisers. As a result the Crown in Right of the State of Tasmania and its employees, contractors and agents expressly disclaim all and any liability (including all liability from or attributable to any negligent or wrongful act or omission) to any persons whatsoever in respect of anything done or omitted to be done by any such person in reliance whether in whole or in part upon any of the material in this report. The MRT laboratories are not NATA registered but work to similar standards.*

*This and other data collected in MRT laboratories may enter the MRT databases but every attempt will be made to ensure it remains closed file and not be available externally, unless at your request.*

# Mineral Resources Tasmania

## Appendix 1: MRT Laboratory Report

**Client:** R Bottrill

**Sample Location:** Alpine Prospect, Granville

**Job Number:** LJN2019-009a

**Analyses:** Approximate Mineralogy and Asbestos Identification

**Methods:** XRD

**Analyst:** L Unwin

**Lab Manager:** R Bottrill

**Date:** 20/3/2019

### Analysis Results – G409212

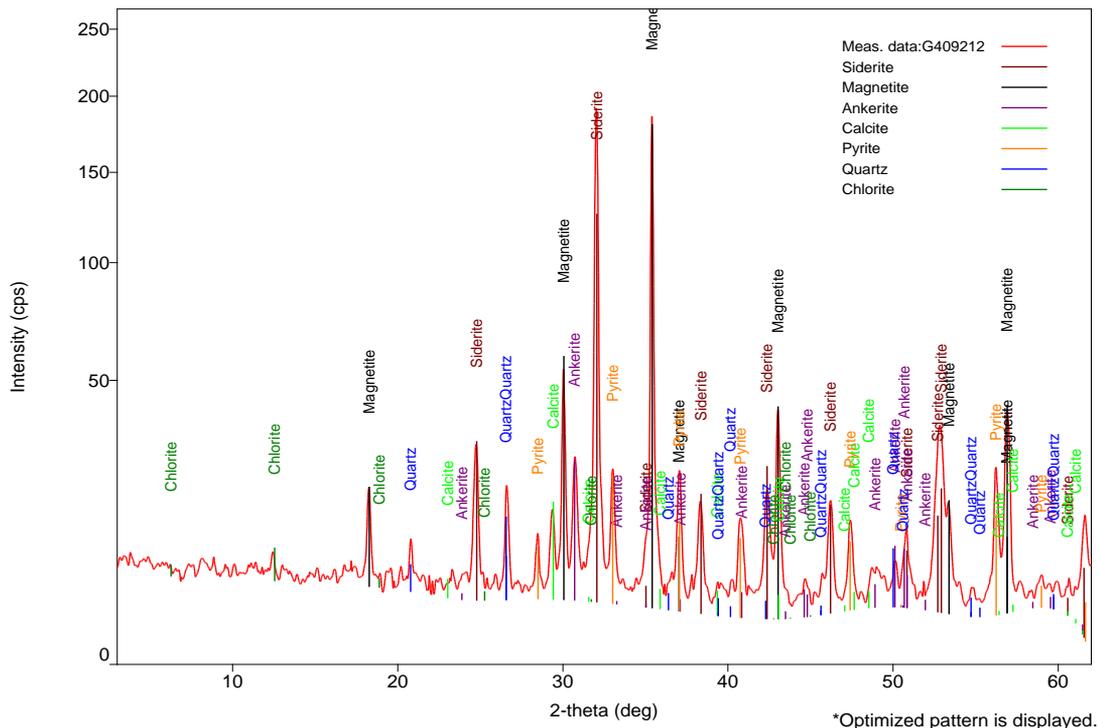
#### General information

Analysis date	20/3/2019	Measurement date	20/3/2019
Sample name	LJN2018-009	Operator	L Unwin
File name	G409212.ras		
Comment	Refined		

#### Quantitative analysis results

Phase name	Content (%)	Formula
Siderite	44(±4)	(Fe <sub>0.65</sub> Mg <sub>0.35</sub> )(CO <sub>3</sub> )
Magnetite	30(±3)	Fe <sub>3</sub> O <sub>4</sub>
Ankerite	10(±2)	Ca(Fe <sup>+2</sup> ,Mg)(CO <sub>3</sub> ) <sub>2</sub>
Calcite	6(±2)	CaCO <sub>3</sub>
Pyrite	4(±1)	FeS <sub>2</sub>
Quartz	3(±1)	SiO <sub>2</sub>
Chlorite	3(±1)	(Fe <sup>2+</sup> ,Mg,Al,Fe <sup>3+</sup> ) <sub>6</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (OH,O) <sub>8</sub>

#### Phase data pattern



# Mineral Resources Tasmania

## Analysis Results – G409215

### General information

Analysis date	27/3/2019	Measurement date	27/3/2019
Sample name	LJN2019-009	Operator	L Unwin
File name	G409215.ras		
Comment	Shifted -0.09		

### Quantitative analysis results

Phase name	Content(%)	Formula
Quartz	65(±8)	SiO <sub>2</sub>
Chamosite	12(±2)	(Fe <sup>2+</sup> ,Mg,Al,Fe <sup>3+</sup> ) <sub>6</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (OH,O) <sub>8</sub>
Phengite	11(±19)	KAl <sub>1.5</sub> (Mg,Fe) <sub>0.5</sub> (Al <sub>0.5</sub> Si <sub>3.5</sub> O <sub>10</sub> )(OH) <sub>2</sub>
Siderite	5(±5)	(Fe <sub>0.65</sub> Mg <sub>0.35</sub> )(CO <sub>3</sub> )
Hydroxylapatite	3(±6)	Ca <sub>5</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH)
Ankerite	2(±8)	Ca(Fe <sup>+2</sup> ,Mg)(CO <sub>3</sub> ) <sub>2</sub>
Calcite	<1(±8)	Ca(CO <sub>3</sub> )
Fluoro-tremolite	<1(±3)	Ca <sub>2</sub> Mg <sub>5</sub> Si <sub>8</sub> O <sub>22</sub> F <sub>2</sub>
Pyrite	<1(±16)	FeS <sub>2</sub>

### Phase data pattern

